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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,880	02/13/2002	Yong Wang	13199-B	8827

7590 03/15/2004
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EXAMINER

JOHNSON, EDWARD M

ART UNIT PAPER NUMBER

1754

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,880

Applicant(s)

WANG ET AL.

Examiner

Edward M. Johnson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-30 is/are pending in the application.
- 4a) Of the above claim(s) 27-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-23 and 26 is/are rejected.
- 7) ☒ Claim(s) 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/02, 11/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1 and 5-6 drawn to a catalyst and method of making thereof is acknowledged. New claims 27-30 are withdrawn as being drawn to a nonelected invention.

Claim Objections

2. Claims 1 and 16 are objected to because of the following informalities: claim 1, line 5, "the catalyst is possesses" appears incorrect. Examiner suggests --the catalyst possesses--. Claim 16, "of claim wherein" appears to be an error. Examiner suggests --of claim 15--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1, 5-7, 9-15, 19-20, 23, and 26 rejected under 35 U.S.C. 102(e) as being anticipated by Wieland et al. US 6,413,449.

Regarding claim 1, Wieland '449 discloses a catalyst comprising palladium/zinc and zinc oxide deposited on a metal oxide (see abstract), wherein the catalyst has a hydrogen productivity of more than 20, and up to 60, $\text{Nm}^3/\text{kg}_{\text{cat}}\cdot\text{h}$ (see column 5, lines 8-15).

Regarding claims 5 and 6, Wieland '449 discloses dispersing support and zinc oxide, adding acidic palladium, and adding a base (see column 7, lines 5-13), followed by redispersion and coating with the catalyst material (see column 7, lines 22-24), wherein palladium and zinc that has passed into solution are precipitated together (see column 7, lines 37-40).

Regarding claim 7, Wieland '449 discloses oxide of aluminum, titanium, and zirconium (see abstract).

Regarding claim 9, Wieland '449 discloses palladium and zinc that has passed into solution are precipitated together (see column 7, lines 37-40).

Regarding claim 10, Wieland '449 discloses immersion in a solution of only zinc nitrate (see column 10, lines 58-59).

Regarding claim 11, Wieland '449 discloses 768.5 g zinc nitrate in one liter of water, which is about 1M zinc.

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Regarding claim 12, Wieland '449 discloses dispersing support and zinc oxide, adding acidic palladium, and adding a base (see column 7, lines 5-13), followed by redispersion and coating with the catalyst material (see column 7, lines 22-24).

Regarding claim 13, Wieland '449 discloses neutralizing the acid solution, which would require at least a neutral pH of 7 (see column 7, lines 11-12).

Regarding claim 14, Wieland '449 discloses calcining at 300-550 degrees C (see column 7, lines 25-28).

Regarding claim 15, Wieland '449 discloses depositing Pd as a solution (see Examples).

Regarding claims 19-20 and 26, Wieland discloses more than 20, and up to 60, $\text{Nm}^3/\text{kg}_{\text{cat}}\cdot\text{h}$ (see column 5, lines 8-15), which would inherently be characterizable in different units of measurement.

Regarding claim 23 arranging on a surface shell about 250 microns thick (see Example 2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at

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the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Regarding claim 8, Wieland fails to disclose large pores.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use large pores in the support of Wieland because Wieland discloses pore volume impregnation (see Examples) and a specific surface area of 140 square meters per gram (see column 8, line 22), which would obviously, to one of ordinary skill, suggest large pores in order to achieve the discloses surface area.

Regarding claims 17-18 and 21, Wieland discloses 82.6% alumina and 11.6% ZnO.

Wieland fails to disclose 1-15% Pd.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use 1-15% Pd because Wieland discloses 5.8% PdZn alloy, which would obviously, to one of ordinary skill, at least suggest an alloy thereof causing between 2% and 5% Pd to be present.

7. Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieland '449 as applied to claims 15 and 21 above, and further in view of Feinstein et al. US 4,177,219.

Regarding claims 16 and 22, Wieland fails to disclose Ru.

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Feinstein discloses 0.5% Ru (see Table III and claims 3 and 6).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the 0.5% Ru of Feinstein in the reforming catalyst of Wieland because Feinstein discloses his 0.5% Ru in a reforming catalyst (abstract, summary) for high scission activity of catalysts (see column 8, lines 20-22) and effective conversion and selectivity (see column 9, lines 35-43).

Allowable Subject Matter

8. Claims 24-25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: A metal oxide layer of a thickness less than 40 microns and the large pore support is foam or felt in the catalyst of the instant claim 24 would not have been obvious to one of ordinary skill in the art at the time the invention was made. 50% of the catalyst's pore volume being composed of pores in the size range of 0.3 to 200 microns in the catalyst of the instant claims 25 also would not have been

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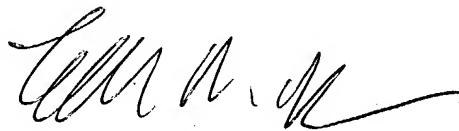
obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ryu et al. US 6,576,588 discloses a process and catalyst for hydrogenation comprising palladium, zinc, and rhodium (see abstract, Examples).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EMJ